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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,747	03/22/2004	Shien-Yang Wu	24061.200 (TSMC2003.1585)	9581
42717	7590	02/15/2006	EXAMINER	
HAYNES AND BOONE, LLP 901 MAIN STREET, SUITE 3100 DALLAS, TX 75202			PRENTY, MARK V	
			ART UNIT	PAPER NUMBER
			2822	

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/805,747

Applicant(s)

WU ET AL

Examiner

MARK PRENTY

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on December 23, 2005, and January 26, 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 19-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 9 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

This Office Action is in response to the papers filed on December 23, 2005, and January 26, 2006.

Claims 19-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144). See MPEP § 821.01.

The specification is objected to for disclosing (in paragraph [0008]): "In an embodiment shown in FIGURE 4, the silicide layer width, W_1 , is preferably two to three times larger than the contact width, W_3 , and the metal line width, W_2 , is preferably at least four to eight times larger than the contact width, W_3 ," because Fig. 4 illustrates that W_1 is larger than W_2 (whereas the specification discloses that W_2 is larger than W_1). Clarification/correction is required.

The applicants' remark: "Applicants respectfully submit that the examiner misinterprets the contact width as W_1 instead of W_3 . By this response, the specification is amended to clarify that W_2 is preferably at least four to eight times larger than contact width, W_3 , not W_1 ," is incorrect. The examiner did not misinterpret the contact width as W_1 , and the applicants' amendment to the specification doesn't overcome the objection. The examiner respectfully submits the applicants do not understand the objection. Specifically, the specification's paragraph [0008] is objected to because it is inconsistent with FIG. 4, which it describes. More specifically, FIG. 4 clearly illustrates that W_1 (the width of the silicide layer 16) is larger than W_2 (the width of metal lines 24 and 26), but paragraph [0008] inconsistently implies that W_2 is larger than W_1 (because it discloses

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that W_2 is "preferably at least four to eight times larger than the contact width, W_3 " while W_1 is "preferably two to three times larger than the contact width, W_3 ").

Claims 4 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 4 and 5 are unclear in reciting that the first and second metal lines are wider than the silicide element (see the above objection to the specification).

The applicants' remark: "Applicants respectfully submit that the amendments made to the specification clarify the features of claims 4 and 5," is incorrect for the same reason its remark with respect to the objection to the specification is incorrect (see the paragraph bridging pages 2 and 3). Again, claims 4 and 5 are contrary to FIG. 4, which clearly illustrates that W_1 (the width of the silicide layer 16) is larger than W_2 (the width of metal lines 24 and 26).

Claims 1-3, 6-8 and 11-16 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent 6,661,330 to Young.

As to independent claim 1, Young discloses a fuse (see the entire patent, including the Fig. 5F disclosure, for example) comprising: a silicide element 815 disposed above a substrate 805; a first terminal contact 875 coupled to a first end of the silicide element; a first metal line 890 disposed above the silicide element and coupled to the first terminal contact; a plurality of second terminal contacts 870 coupled to a second end of the silicide element, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width (i.e., in the dimension across

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the page); a second metal line 890 disposed above the silicide element and coupled to the plurality of second terminal contacts; and the silicide element having a sufficient width that a programming potential applied across the first and second metal lines causes a discontinuity in the first terminal contact.

Claim 1 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 2, Young's fuse further comprises a polysilicon layer 810 below the silicide element.

Claim 2 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 3, Young's fuse further comprises an active region disposed below the silicide element (see column 5, lines 17-30).

Claim 3 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 6, a cross-sectional area of Young's first terminal contact 875 is significantly less than a cross-sectional area of the silicide element 815.

Claim 6 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 7, a cross-sectional area of Young's first terminal contact 875 is significantly less than a combined cross-sectional area of the plurality of second terminal contacts 870.

Claim 7 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 8, Young's first terminal contact 875 and the plurality of second terminal contacts 870 comprise metal (see column 9, lines 57-64).

Claim 8 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to independent claim 11, Young discloses a semiconductor fuse (see the entire patent, including the Fig. 5F disclosure, for example) comprising: a silicide strip 815 disposed above a substrate 805; a first terminal contact 875 electrically coupled to a first end of the silicide strip; a plurality of second terminal contacts 870 electrically coupled to a second end of the silicide strip, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width (i.e., in the dimension across the page); the silicide strip having a sufficient width that a programming potential applied across the first terminal contact and the plurality of second terminal contacts causes an increased resistance across the first terminal contact and the plurality of second terminal contacts.

Claim 11 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 12, Young's fuse further comprises a polysilicon layer 810 below the silicide element.

Claim 12 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 13, Young's fuse further comprises an active region disposed below the silicide element (see column 5, lines 17-30).

Claim 13 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 14, a cross-sectional area of Young's first terminal contact 875 is significantly less than a cross-sectional area of the silicide element 815.

Claim 14 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 15, a cross-sectional area of Young's first terminal contact 875 is significantly less than a combined cross-sectional area of the plurality of second terminal contacts 870.

Claim 15 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

As to dependent claim 16, Young's first terminal contact 875 and the plurality of second terminal contacts 870 comprise metal (see column 9, lines 57-64).

Claim 16 is thus rejected under 35 U.S.C. 102(e) as being anticipated by Young.

Claims 10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,661,330 to Young together with United States Patent 6,642,601 to Marshall et al. (Marshall, cited in the Information Disclosure Statement filed on March 22, 2004).

Claim 10 and 18 depend on independent claims 1 and 11, respectively, which are rejected under 35 U.S.C. 102(e) as being anticipated by Young (see above). The above rejection of independent claims 1 and 11 under 35 U.S.C. 102(e) as being anticipated by Young is hereby incorporated by reference into this rejection of dependent claims 10 and 18 under 35 U.S.C. 103(a) as being unpatentable over Young together with Marshall.

The difference, therefore, between claims 10/18 and Young is the claimed fuses further comprise a programming transistor.

Marshall teaches that fuses are conventionally programmed by a transistor (see the Fig. 1 disclosure).

It would have been obvious to one skilled in the art to provide Young's fuse with a programming transistor because Marshall teaches that fuses are conventionally programmed by a transistor.

Claims 10 and 18 are thus rejected under 35 U.S.C. 103(a) as being unpatentable over Young together with Marshall.

Claims 9 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The applicants' arguments as to amended independent claims 1 and 11 are incorrect.

First, the applicants' argument as to Young's Fig. 2A is misplaced because the rejection relies on Young's Fig. 5E. Indeed, Young's Fig. 2A does not even disclose the claimed plurality of second terminal contacts (but Young's Fig. 5F does).

Furthermore, the applicants' argument as to Young's Fig 5F: "As shown in Figure 5F and at column 9, lines 40-50, Young teaches a first contact hole 845 and a second contact hole 850 in dielectric layer 840. However, Young teaches that the first contact hole 845 is larger than the second contact hole 850. Therefore, similar to the above, Young teaches a fuse structure that comprises a first contact hole having a larger width than the second contact hole. The first and second contact holes are not equal in width," is incorrect for at least two reasons. First, Young actually discloses one embodiment comprising a single contact hole 845 larger than a single contact hole 850, and another embodiment comprising a plurality of contact holes 845 and a single

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contact hole 850 of undisclosed relative size (see column 9, lines 37-47). Furthermore, even assuming for the sake of argument that Young discloses another combination embodiment comprising a single contact hole 850 and a plurality of "larger" contact holes 845, such does not mean that the contact hole 850 and the contact holes 845 are unequal in "width." Young's Fig. 5F contact holes 845 and 850 have the same "width" (across the page), and even assuming for the sake of argument that each of Young's Fig. 5F contact holes 845 is "larger" than contact hole 850, they are "larger" because they are longer (in and out of the page), as per Young's Figs. 3A-3C disclosure. Therefore, Young does in fact disclose a plurality of second terminal contacts 870 coupled to the second end of the silicide element, wherein each of the plurality of second terminal contacts 870 and the first terminal contact 875 are equal in width (across the page), as recited in amended independent claims 1 and 11.

The applicants' arguments as to dependent claims 10 and 18 are incorrect, particularly to the extent they rely on the applicants' incorrect arguments as to independent claims 1 and 11, which are anticipated by Young as explained above.

In any event, the applicants' argument: "Even, *arguendo*, if Young teaches terminal contacts that are equal in width, Marshall still does not teach or suggest a first metal line disposed above the silicide element and coupled to the first terminal contact or a second metal line disposed above the silicide element and coupled to the plurality of second terminal contacts," is misplaced because Young also discloses such metal lines 890, as explained in the rejection under 35 U.S.C. 102.

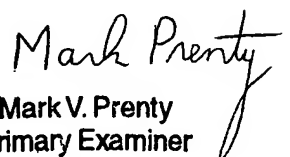
The applicants' argument: "In the present case it is clear that the examiner's combination arises solely from hindsight without any showing, suggestion, incentive or motivation in either reference for the combination as applied to claims 1 and 11, from which claims 10 and 18 depend," is incorrect for at least two reasons. First, independent claims 1 and 11 are rejected under 35 U.S.C. 102(e), not 35 U.S.C. 103(a). Furthermore, the applicants do not even substantively address, let alone rebut, the explanation of the rejection of dependent claims 10 and 18 under 35 U.S.C. 103(a) as being unpatentable over Young together with Marshall.

Finally, the applicants' argument: "Furthermore, even, *arguendo*, if a person of ordinary skill in the art were to combine the teachings of Young and Marshall, the resulting combination still would not be a fuse that comprises a first metal line disposed above the silicide element and coupled to the first terminal contact, a plurality of second terminal contacts coupled to a second end of the silicide element, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width, and a second metal line disposed above the silicide element and coupled to the plurality of second terminal contacts," is misplaced because Young's Fig. 5F alone discloses a fuse that comprises a first metal line 890 disposed above silicide element 815 and coupled to first terminal contact 875, a plurality of second terminal contacts 870 coupled to a second end of the silicide element, wherein each of the plurality of second terminal contacts 870 and the first terminal contact 875 are equal in "width" (across the page), and a second metal line 890 disposed above the silicide element and coupled to the plurality of second terminal contacts 870.

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Registered practitioners can telephone the examiner at (571) 272-1843. Any voicemail message left for the examiner must include the name and registration number of the registered practitioner calling, and the Application/Control (Serial) Number. Technology Center 2800's general telephone number is (571) 272-2800.


Mark V. Prenty
Primary Examiner